

# Seed Tech News



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## Compulsory Registration of Varieties for Seed Trade in India

**I**ndian seed industry has undergone a rapid change in post WTO era in view of: (1) changing legislation, (2) restrictions on free exchange of germplasm and (3) introduction of transgenic crops. As the seed supply and its quality becomes increasingly important, the knowledge on legislative mechanisms form the edifice on which a sound seed system will develop. The rules, regulations and infrastructure coordinating the components of the seed system further help to evolve organizations to specialize in different functions of the seed system.

### Registration of Kind & Varieties: Provisions in the proposed Seed Bill

The new Seed Bill envisages:

- to make the registration of varieties obligatory
- creation of a National Register of Seeds
- to regulate (make easier) the imports and exports of seeds
- new regulations on GM crops
- to improve market conditions for private seed companies

Despite a large number of notified varieties being available at lower price, farmers' continued to depend on their own judgement, they are putting high stakes on  $F_1$  hybrid seeds of sunflower, cotton, maize, bajra, jowar, tomato, cabbage and many other vegetables. The proposed new seed law introduces the concept of **mandatory registration** of all seeds offered for sale. This is a significant change from the existing law, which sought to regulate the quality of only a limited number of varieties notified under the law. A **National Seed Board** has been proposed for implementation of Seeds Act and registration of varieties. All registered varieties will be recorded in a National Register of Seeds (database). Registration will be granted for new varieties for a period of 15 years in the case of annual & biennial crops and 18 years for long duration perennials. As with registered varieties in other parts of the world, varieties need to be field-tested to determine their VCU (Value for Cultivation and Use). Furthermore, seed producers, seed processing units, seed dealers and horticulture nurseries all have to be registered with the state government in which they operate. The new Seed Bill supports further introduction of GM Crops and does not prohibit its registration. Transgenic seeds registration is however subject to clearance under the Environment Protection Law. However, the seed bill does

ban seed of a kind or variety containing *Genetic Use Restriction Technology (GURT) and Terminator Technology*. All imported seeds will also need to be registered, though the government may allow the import of an unregistered seed for research purposes.

## Status of compulsory registration

Many of the developing nations have initiated registration of their varieties to prove their strength and capability of developing new varieties in the wake of new IPR regime. Yet the developed nations like, USA, Japan, Australia, Canada and entire South Asia do not have such a system. Even in China, only five major crops have been brought under such a provision. Due to proximity, the European Nations have been competing with each other to make a comprehensive list of their varieties. They started this exercise a hundred years ago and gradually lost the drive when the  $F_1$  hybrids replaced the old varieties. UK has a comprehensive variety registration system but EU countries are planning to do away with it on account of its high costs and its irrelevance in the modern era of downsizing. So far varietal registration has been restricted to OP varieties and the seed trade did not opt for registration of their hybrids as given below.

Country	Status Compulsory Registration
USA	None
Canada	None
Japan	None
Brazil	None
Argentina	Only O.P. varieties of food crops
India	None (Seed Bill yet not approved)
France	Only O.P. varieties of field crops
Germany	Only O.P. varieties of field crops
U.K.	Only O.P. varieties of food crops
China	O.P. varieties of five cereals

Most of the countries consider the compulsory registration of varieties as the first hurdle in the seed marketing. It is designed to offer consumer protection but their testing in small trials under controlled conditions do not offer the desired guarantee of performance when the same varieties are grown on farmers' field with limited intervention.

## Compulsory registration:

### Indian perspective

The objective of imposing compulsory registration at this stage, and particularly arduous methods of VCU testing for three years have suspicious motives behind it. The authorities have ample experience of past failures from a similar exercise. They released around 2600 varieties in the last five decades but a consolidated list of these varieties never reached the farmers or breeders. A scrutiny of the breeder seed production program shows that less than 300 varieties of the above are being maintained and the others got rejected by the farmers. Imposing compulsory registration in its proposed manner will prove counterproductive. The regulatory agencies will grab the opportunity to strangle the seed industry for pecuniary gains. It will thwart the growth of seed trade and farmers will fail to benefit from the fast advances in crop improvement. India is emerging as one of the biggest markets in the world and as a result there is huge pressure on the government to adopt the New Seed Bill. The Seed Bill is just one of the legislative changes in India to open up its markets and harmonise its laws with rich countries. These include amendments to the country's patent law and the model Agricultural Produce Marketing Law.

In addition, Plant Breeders' Rights or Plant Variety Protection regimes allow the use of protected varieties for further breeding (Breeders' exemption). In some cases, this has, however, led to problems e.g. mutants in ornamentals and fruits. Accordingly, the UPOV (1991) Act introduced the principle of essential derivation. It was thought that the new principle of essential derivation would considerably reduce the present pressure on the minimum distance between varieties, as it will discourage plagiaristic approaches. After an in-depth discussion on the issue of minimum distance between varieties, it was preferred to search for objective assessment of the genetic distance, crop by crop, discuss the threshold for each crop and try to reach a common agreement among breeders. This in conjunction with compulsory registration, when viewed, will aid in weeding out duplicate hybrids and varieties in the market by giving edge to the rightful owner of the variety to exercise his authority for legal action on those trading seeds of protected variety without due permission/license of the owner of the protected variety. In a move designed to improve the country's seed business, India has introduced new seed legislation that protects the rights of both plant breeders and farmers. The Plant Variety Protection and Farmers' Rights Act set a precedent for developing countries. The Bill is unique in the sense that it is the first time anywhere in the world that

the rights of both breeders and farmers have received integrated attention. Farmers and breeders are allies in the struggle for sustainable food security and hence their rights should be mutually reinforcing and not antagonistic. The Bill retains this important feature. Under the legislation, plant breeders will have the right "to produce, sell, market, distribute, import, or export a variety; in short, full control over production and commercialization of seeds". Genetically modified (GM) varieties are encouraged by a provision in the Bill for creating a separate fast track for approving "Essentially Derived Varieties; that are identical to the parent variety except for change in single character." Most GM varieties belong to this category, and any variety can be registered if it is "novel, distinct, uniform and stable". The only stipulation is that breeders are required to declare that the parental material used for breeding was lawfully acquired and their new variety "does not contain any gene or gene sequence involving terminator technology".

The official government line, when arguing in favour of this Bill, is that "if we don't know who is selling the seeds, we cannot control their quality". This, of course, is the same argument used by the seed industry around the world. So this new law is being presented as a "consumer protection" act for farmers. In the light of several reports of farmers' suicides and crop failure this has found favour with many unsuspecting groups of civil society. So will this law be a good news for farmers? What protection do farmers get if their legally-bought registered-varieties fail? Interestingly, farmers at this point can only turn to the Consumer Protection Act of 1986, an option which is available today without any new legislation. Meanwhile, the Indian Seed Industry is lobbying for the removal of seeds from the Consumer Protection Act. Hence voluntary registration of varieties is an optimistic option. Government should attract the seed trade for registration by offering official stamp of quality on seeds to enhance its market value like an ISI mark. A close official monitoring of quality and success of such products on fields will help both the farmers and a healthy growth of seed industry. Quality control at seed production and certification stage will be far more effective process than the punitive seed marketing regulations. It will allow effective use of regulatory machinery and will benefit the farmers. Current Indian Seed Industry is vibrant as that of any developed countries including that of United States of America. India is now well equipped to become a major player in the International Seed Trade. All that is required is committed Govt. support and encouragement to this sector and concerted efforts in the Seed Industry on R&D, Quality,

Customer focus and Technology front. This can be achieved by conscious efforts by both Govt. and Seed Industry in eliminating the barriers and establishing a transparent system of work.

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सत्यमेव जयते  
Government of India

## 4<sup>th</sup> National Seed Congress on “Quality Seed for Food Security” January 23-25, 2012

Honourable Chief Minister of Haryana, Sh. Bhupinder Singh Hooda inaugurated the 4<sup>th</sup> National Seed Congress jointly organized by Haryana State Seed Certification Agency, Chandigarh and National Seed Research & Training Centre, Varanasi, Union Minister of State for Agriculture and Food Processing Industries, Dr. Charan Das Mahant was the guest of honour and Sh. Sukhbir Kataria, Minister for Sports and Agriculture, Govt. of Haryana was the special guest. Sh. S.K.G. Rahate, Joint Secretary (Seeds) and Director (NSRTC), Govt. of India, Sh. Roshan Lal, FC & PS, Govt. of Haryana, Sh. G.C. Pati, Additional Secretary (Seeds), DAC, Govt. of India and Dr. S.S. Dahiya, Director, HSSCA were other dignitaries present during the function. More than 290 seed scientists and policy makers representing both public and private seed sector, across the country participated in the congress.

Development of improved varieties, technologies, policies and increased public-private investment in the seed sector in the long run will continue to be a major contributor to increase food and nutritional security, in the context of increased population growth and climate change scenario. Innovative technologies embodied in seed has to be supplied to farmers for achieving higher agricultural production. The development of reliable and internationally acceptable methodologies through close collaboration between all stake holders along the seed supply chain encompassing production, processing, laboratory testing, varietal certification and phytosanitary measures, will bring about substantial growth and development of domestic and international trade for the benefit of farmers. The congress highlighted the need to move towards internationally harmonized systems of Organization for Economic Co-operation and Development (OECD), the International Union for the Protection of New Varieties of Plants (UPOV), the International Treaty on Plant and Genetic Resources for Food and Agriculture (ITPGRFA) and the International Seed Testing Association (ISTA), which

will facilitate the availability of germplasm, new varieties and high quality seeds for the benefit of farmers. Germplasm conservation and multilateral system of germplasm access and benefit sharing constitutes a central element for the achievement of global food security. It was concluded that the government should strongly encourage, implement and maintain predictable, reliable and affordable regulatory measures to ensure that farmers have access to high quality seed at a fair price. The three-day deliberations across various sessions helped to crystalize various useful conclusions to promote seed research, capacity building and seed industry development.

### Congress conclusions

*Session 1: Issues impacting seed production, access to quality seed and international seed trade*

**Chairman : Sh. S. K. G. Rahate, Jt. Secy. (Seeds)**  
**Co-Chairman: Dr. R. P. Narwal**

- The issues of VCU, Certification and Regulation mentioned in the New Seed Bill will be the impediments for the seed industry, thus a relook into these provisions is needed to make it more flexible and practicable.
- In view of the rise in global mean surface temperature by 1.5° to 3.5°C by 2100, the adaption of cultivars is at high risk. The need of the hour is to devise the crop improvement programs and develop innovative seed enhancement technologies for better plant stand under environmental stress.
- The development of National Seed Grid would be vital for seed informatics.
- It is worth to have research on alternative areas of seed production in crops like cotton, maize, hybrid paddy, vegetables and flower crops.
- The issues of registration for sale, pre-grant opposition to registration, clarification with regard to standards for maximum seed health, traceability, the declaration of percentage of the variety and provisions for benefit sharing in harmony with PVPFRA and Biodiversity Act need more clarification in the New Seed Bill.
- Improvement in the international seed trade is possible if we harmonize our regulations with other

international agencies Viz., OECD, UPOV, IPPC-SPS/NPPO and ISTA.

## **Session 2: GM crops for food security**

**Chairman: Dr. N. Seetharama, Director, ABLE-AG**

- Breaking yield barriers, improving productivity and nutritional quality of food grains, minimizing use of chemical inputs is possible by GM technology in food crops. Need was felt to replicate GM technology in vegetable and fruit crops. Further, Scientific journalism and sensitizing society about the advantages of cultivating GM crops will aid in its wider acceptance by public.

## **Session 3: Poster session**

## **Session 4: Seed policy & seed quality**

**Chairman: Dr. R. K. Chowdhury, Former PD, NSP (Crops)**

- Low seed quality with impaired seed policy would result in crop failures and is a potential threat to food security.
- Uniformity in varietal certification, phyto-sanitary measures and laboratory testing will greatly facilitate development of domestic and international seed trade.
- Production and marketing of different classes of seeds is highly regulated at both national and international level. Thus a harmonized, transparent and efficient regulatory system is crucial to ensure that farmers have access to high quality seeds at fair price.
- To improve seed quality assurance infrastructure, further research should focus to develop more effective, reliable, simple, quicker, robust and cheaper testing methodologies for seed quality assurance/regulation.

## **Session 5: Seed quality enhancement**

**Chairman: Dr. Malavika Dadlani, JD (Res.), IARI**

**Co-Chairman: Dr. Rajendra Prasad, PD, DSR, Mau**

- Indian seed market has grown rapidly, and presently is worth \$2.4 Bn. However, cereals, fibers and oilseeds contribute about \$1.4 Bn, OPVs of these crops \$450 Mn, vegetables \$400 Mn, and others around \$150 Mn.
- Seed deterioration is inevitable, its rate could be slowed down through seed enhancement technologies for improving seed quality like drying beads, polymer coating, thermal treatment, electron dense seed coating, magnetic treatment, microwave energy and cold plasma treatment, molecular impulse response, sequential coating with pesticides, etc.

## **Session 6: Public-private partnership**

**Chairman: Dr. Raju Kapoor, Executive Director, NSAI**

- The rapid evolution of modern plant breeding, genetics, germplasm development and seed biology has altered

the landscape of the public-private partnership in research. However, with unified priorities and new models for cooperation and collaboration, the strengths of both sectors can be brought to bear on the significant challenges faced by the agricultural industry.

- The ideas converged in creation of "Seed Industry-Researchers Interface" to take up research on common problems through Public-Private Partnership mode.

## **Session 7: Poster session**

## **Session 8: Seed systems and plant variety protection**

**Chairman: Dr. P. K. Agrawal, MD, Prasha Agri-Consultants**

- Community seed bank should be strengthened to promote the access to better quality seed of OPV and establishment of block level seed storage infrastructure. Need to promote accelerated adoption of hybrid rice in eastern India through outreach programme and financial incentives.
- The breeder's exemption, wherein protected plant varieties can be freely used for further plant breeding will aim at developing new, protected varieties having greater acceptance in competitive markets.

## **Session 9: Plenary session and end of congress**

*"India's Seed Programme has a strong seed production base in terms of diverse and ideal agro-climates spread throughout the country for producing high quality seeds of several tropical, temperate and sub-tropical plant varieties in enough quantities at competitive prices. He urged the scientists to develop varieties and hybrids to achieve nutritional security and to mitigate the impact of climate change as well as terminal heat in wheat."*

**Sh. Bhupinder Singh Hooda**

Honourable Chief Minister of Haryana

*"Development of such variety of seeds, which would achieve food security, and also supplement the nutritional requirement of target groups through food grains is the need of the hour; as 40 per cent of the population was suffering from malnutrition."*

**Dr. Charan Das Mahant**

Union Minister of State for Agriculture & Food Processing Industries

With inputs from Proceedings of the 4th National Seed Congress, 2012 prepared by **Dr. Vilas A. Tonapi, Head, DSST, IARI** and **Dr. S. S. Dahiya, Director, HSSCA, Chandigarh**

## Farmers' Seed Enterprise Initiative by IARI

With a mission of transforming "Utpadak se Udhya" ZTM-BPD Unit organized a group of farmers and launched a Farmers Producer Company "beej India Producer Company Ltd" under Companies Act, 1956. Several farmers' sensitization meetings were held at IARI and at farmers place for creating awareness about the benefits of making an organized effort for producing premium seed of various IARI bred field crops, vegetables, floriculture etc under a common brand name "BEEJINDIA".

Sensitization through various activities ignited entrepreneurship in farmers from three clusters of Hapur & Bulandshahar (UP) and Chirawa (Rajasthan). They were incorporated in a defined group for taking up seed multiplication venture under the mentorship of ZTM-BPD Unit, IARI.

This incubating company has 50 farmers with 20 subscribed founding members. It has 8 member with IARI as Advisory Director in the Executive Board. Activities have been initiated as Seed Venture from Rabi 2012 covering approximate area of 100 ha. The target crops constitute wheat, pulses, oilseeds, potato and vegetable crops.

"beej India Producer Company Ltd" will not only bring prosperity directly among farmer members but also will set an example for farmers of other areas.

Contributed by Dr. Archana Suman, I/C ITMU, IARI

### New Appointment



**D**r. Kunsoth Keshavulu, Associate Professor and Head, Department of Seed Science and Technology, ANGRAU, Hyderabad is the new face of ISTA

Technical Committee for Species and Variety Testing for three consecutive years starting 2011. The main objectives of the variety committee are developing, adopting and publishing standard procedures for determining the variety and/or species identification through morphological, chemical, biochemical and DNA fingerprinting methods. Dr. Keshavulu has significant contributions in areas of seed biology, seed production, certification and varietal identification. He has worked with renowned seed scientists Prof. Kent J. Bradford in Department of Plant Sciences at UC Davis, USA.

## NOTIFICATION

### Department of Agriculture and Cooperation Ministry of Agriculture, Govt. of India New Delhi, the 18 August 2011

**S.O. 1912(E)** - In exercise of the powers conferred by Sub-rule (3) of Rule 37 of Protection of Plant Varieties and Farmers' Rights Rules, 2003, the Central Government hereby notifies the following bodies to which a copy of the certificate of registration issued under Sub-section (2) of Section 24 of the Protection of Plant Varieties and Farmers' Rights Act, 2001 (53 of 2001) shall be sent, namely:

#### S.No. Name of the Body or Agency

- |    |   |
|----|---|
| 1. | National Biodiversity Authority, Chennai.           |
| 2. | Indian Council of Agricultural Research, New Delhi. |

Sd/-  
S. K. G. Rahate, Jt. Secy.  
[F. No. 1-12/2011-Seeds-V]

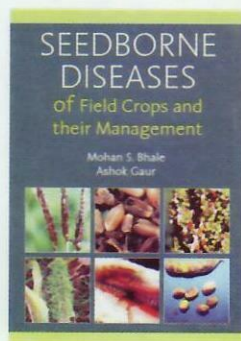
### New Delhi, the 18 August 2011

**S.O. 1913(E)** - In exercise of the powers conferred by Sub-section (2) of Section 29 read with Section 14 of the Protection of Plant Varieties and Farmers' Rights Act, 2001 (53 of 2001), the Central Government hereby notifies the following crop species (not being extant varieties and farmers' varieties) for the purpose of registration of varieties under the said Act, namely:

S.No.	Crop species for the purpose of registration	Common name in English	Common name in Hindi
1.	<i>Triticum durum</i> Desf	Wheat	Gehun
2.	<i>Triticum dicoccum</i> L.		
3.	<i>Triticum</i> species (other than <i>T. aestivum</i> L., <i>T. durum</i> Desf and <i>T. dicoccum</i> L.		
4.	<i>Cocos nucifera</i> L.	Coconut	Nariyal
5.	<i>Catharanthus roseus</i> L., G. Don.	Periwinkle	Sadabahar
6.	<i>Bacopa monnieri</i> L.	Indian Pennell	Brahmi Pennywort
7.	<i>Rosa damascene</i> Mill	Rose	Gulab
8.	<i>Plantago ovate</i> L.	Blond Forsk	Isabgol Psyllium
9.	<i>Mentha arvensis</i> L.	Menthol Mint	Pudina

Sd/-  
S. K. G. Rahate, Jt. Secy.  
[F. No. 2-9/2009-SD-V]

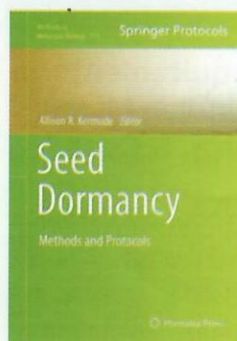
## NEW PUBLICATIONS



### Seedborne Diseases of Field Crops and their Management

Mohan S Bhale & Ashok Gaur (eds.)

2011, Agrobios (Intl.)  
Rs. 2500.00



### Seed Dormancy Methods and Protocols

Allison R. Kermode (ed.)

2011, Humana Press  
ISBN 978 1 61779 230 4  
\$ 139.00

Awareness for seed health has increased many folds among planners, researchers, growers, traders, consumers and all those who are associated with seed in the trade-era of WTO and subsequent post GATT- implications of various treaties. With the implementation of Seed Bill (amendment in Seeds Act, 1966), the seed health testing will become obligatory along with seed germination and purity tests for seed certification. However, in Indian Seed Certification System several diseases associated with seeds have been designated as objectionable in seed production programme of Foundation and Certified seeds. The tolerance limits for Seed Crop and Seed Lot have been formulated in Indian Minimum Seed Certification Standards. The book provides a comprehensive and detailed account of objectionable seed-borne diseases of field crops and this dedicated book as a Festschrift volume in the honour of *Professor Mahendra Nath Khare*, one of the pioneer seed pathologist of India. The book is designed for those involved in Seed Science and Technology, especially the young people involved with production, certification and teaching seed health. Besides agricultural universities the subject has been introduced in traditional universities, hence the book will serve as a reference book for them. The volume contains 30 specialized updated informative research reference articles provided by 42 eminent seed pathologists of the country, working with seedborne and seed transmitted pathogens.

Source : Agrobios (International)

Understanding seed-related processes is of major social, environmental and economic concern. The viability and vigour of seeds are the very basis for sustainable agriculture and forestry, and comprehending the molecular and cellular events underlying these processes will become increasingly important to many economical sectors and for species that provide the world's food supply. *Seed Dormancy: Methods and Protocols* covers analytical methods and approaches which have already lead to significant advances in the understanding of seed dormancy and germination. Chapters cover explanations of processes leading to the induction, maintenance, and termination of seed dormancy, the classification of different dormancy types, as well as an overview of protocols used for dormancy-termination of seeds of conifer species. This volume emphasizes methods essential for abscisic acid (ABA) analyses, including methods that have been important for receptor identification, analyses of ABA-catabolizing enzymes (the 8'-hydroxylases), and identification of novel signal transduction components, interacting partners, and/or response factors. The volume closes by addressing the development of new technologies, including spectroscopic methods (some of which allow for non-destructive sampling) as well as highly effective tissue-printing methods for seed dormancy research. Written in the successful *Methods in Molecular Biology™* series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible protocols, and notes on troubleshooting and avoiding known pitfalls.

Source : [www.springer.com](http://www.springer.com)

### Editorial Contact Information

Please send us information related to any news, new projects, opinions on policy issues, current happenings, publications, book reviews, foreign visits, new appointments, trainings, seminars, workshops and conferences or other interesting stuff related to seed for the next issue of Seed Tech News.

Suggestions and comments are welcome!

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### M.Sc.

#### **Studies on Pollination Requirements in Hybrid Seed Production of Indian Mustard [*Brassica Juncea* (L.) Czern. & Coss.]**

The first ever Indian mustard hybrid, NRC Sankar Sarson (NRCHB 506) developed through heterosis breeding using *Moricandia* CGMS system by Directorate of Rapeseed Mustard Res., Bharatpur is known for its high seed yield and oil content. Temperatures prevailing especially during flowering and seed set affect seed yield and quality, thus right time of sowing is most critical. Late sown early varieties produce less number of siliqua and early sown late varieties give more leafy growth and produce siliqua very late. A study was conducted to evaluate the effect of different sowing times on the plant growth, seed yield and quality. Standardization of optimum planting ratio is also essential to facilitate effective pollination and to accommodate more female plants in the seed production plots to get maximum hybrid seed yield. Our study showed that the optimum sowing time of parental lines of NRCHB 506 is third week of October to get maximal quality seed. Optimum planting ratio of female to male for hybrid seed production is 8: 2. Honeybee population was found in an increasing mode with rise in temperature, indicating a relatively less bee population in early sowing plants for which flower period coincides with relatively low temperature conditions. Few beehives near the growing field may compensate this deficit in hybrid seed production of mustard in October. Strict maintenance breeding is must to maintain the genetic purity of the parental lines. Our study emphasised to provide an optimum seed production practice to the seed growers under Delhi conditions.

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### Ph.D.

#### **Optimization of Quality Hybrid Seed Production Technology in Bottlegourd (*Lagenaria siceraria* (Molina) Standl)**

Crop husbandry and pollination dynamics forms the most critical step in Bottlegourd hybrid seed production. An experiment was conducted at Seed Production Unit, IARI, New Delhi, where trailing method recorded higher number of filled seeds/fruit (584.7), seed yield/vine (517.5 g), other growth and yield parameters compared to traditional method. Seed quality attributes from freshly harvested fruits on 60 days from anthesis, trailed on bamboo, recorded higher germination, seedling dry weight and vigour indices. Economics showed higher BC ratio for trailing method (3.87) over traditional method (2.10). Comparing different time of pollination, hand pollination at 2.00 pm recorded higher number of filled seeds/fruit (505.73), test weight (15.72 g) and seed yield/fruit (79.53 g) compared to pollination at 12.00 noon, 4.00 pm and 6.00 pm. Significant differences were noted for seed quality parameters among different time of pollination. Seeds harvested from fruits pollinated at 2.00 pm recorded higher germination (98%), vigour indices (3172.48 and 40.26) and lower conductivity of seed leachates (45.15  $\mu\text{mhos/cm/g}$ ). Similarly 30 days of post harvest seed ripening in the fruit recorded significantly higher germination, weight of seed coat and weight of cotyledon. Hence, fruits from trailed veins harvested later to 60 days from anthesis, from flowers pollinated at 2.00 pm with fruits subjected to 30 days post-harvest ripening is recommended for obtaining higher seed yield and quality with higher returns in Bottle gourd hybrid seed production under Delhi conditions.

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